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East Africa to free trade, this was the greatest boon he could confer. I thought only of my work, and not of myself or children. I feel more at liberty in telling you of my domestic anxiety, and my fears lest Tom should go to the examination unprepared, because you have a family yourself, and will sympathise with me. I shall give Lord Clarendon the same geographical information as I have given you; and as I have not the conscience to ask more paper from my Arab friend, I shall ask Miss Frere to favour me by writing to my daughter a little of the above, and sending it to Mr. Murray, who will know where she is. Agnes is to tell Tom not to go in for examination till he is well prepared, and he may take a year more of education where he may have found the most benefit. I had written you a long letter, which now lies at Kabuire; the foregoing contains the substance of it. Miss Frere must take this into consideration, if annoyed at my asking her to write to a stranger in such a climate as that of India. I regret that the Nile has prevented me from following out my aspirations for the benefit of the people. I sometimes comfort myself by the hope that by making this country and its inhabitants better known, and occasionally imparting a little knowledge, I may be working in accordance with the plans of the all-embracing Providence for the good time coming yet. At other times, I feel as if serving a few insane geographers, who will count me a man and a brother. There is a large tribe of Troglydites in Rua, with excavations 30 miles in length, and a running rill passing along the entire street. They ascribe these rock-dwellings to the hand of the Deity. The 'writings' in them are drawings of animals; if they had been letters, I must have gone to see them. People very black, strong, and outer angle of eyes upwards. The summary of sources I give Lord Clarendon as flowing into Chambeze—Luapula, Lualaba; and the lakes are thirteen in all, and are larger than the Isis at Oxford and Avon at Hamilton. Five in another line of drainage, and five in a third receptacle, make twenty-three in all: these do not include 'burns.' Lofu has eleven of them, from 5 to 15 yards wide, and perennial. I did get a bit of paper and write to Agnes, so Miss Frere is absolved from the penance. Love to Lady Frere and her family.

(Signed)

"DAVID LIVINGSTONE."

5. *Letter from Dr. KIRK to C. GONNE, Esq., Secretary to the Government, Bombay.*

"SIR,

"Zanzibar, 7th September, 1869.

"The chief point of geographical interest in the present letter of Dr. Livingstone is the statement that the sources of the Nile are to be found in the lakes and rivers that drain the great valley in which Cazembe is situated, and lying to the south of Tanganyika, between 10° and 12° of south latitude.

"The town of Cazembe, from which Dr. Livingstone's previous letters (December, 1867) were dated, has been already visited and described by two Portuguese missions. It is situated on the shores of one of a chain of lakes and rivers that flow northwards.

"The Chambeze, having collected by many streams the waters of the northern slope of the damp, elevated plains, flows to join Lake Bangweolo; this, again, is connected with Lake Moero by the Loapula, on whose banks the town of Cazembe is built. Moero is, in its turn, drained by the Lualaba into another lake, named Ulenge, and here exploration ends.

"Natives have told Dr. Livingstone that Ulenge is an island-studded lake, whose waters join the Lufira, a large river coming from the western side of the same great plain, whose eastern slope is drained by the Chambeze. This united stream, some say, enters the Tanganyika, and thence, by the Loanda, into Lake Chowambe; but Dr. Livingstone's informants are not unanimous, and some assert that the Lufira passes to the west of Tanganyika, and so to the

Lake Chowambe, which Dr. Livingstone thinks is the same as the Albert Nyanza of Sir Samuel Baker.

"In fact, the interest of the journey centres in the southern connections of the Albert Nyanza, and Arab traders generally agree in thinking that a water-communication does exist between that and the Tanganyika, but I have not met with any one who professes to have traced out this communication.

"From Arabs who visit Cazembe I learn that the lakes now described by Dr. Livingstone are of considerable size, probably from five to ten days' march in length, and, like Nyassa, Tanganyika, and the Albert Nyanza, overhung by high mountain-slopes, which open out in bays and valleys, or leave great plains, which, during the rainy season, become flooded, so that caravans march for days through water knee-deep, seeking for higher ground on which to pass the night. The country abounds with large game and domestic cattle, while the climate is spoken of as not unhealthy, and is certainly a contrast to the Zanzibar coast, if we may judge from the tanned healthy traders who return.

"I have the honour to be, Sir, your most obedient servant,  
(Signed) "JOHN KIRK."

The PRESIDENT further explained, with reference to these letters, that the one to the Earl of Clarendon had only been received since the meeting began. The affectionate letter from Livingstone to the President, consisting of ten or twelve pages of very small writing, was received only just before the meeting, and there was no time to select any details of interest which it might contain. He could not conceive of heroism more perfect than that shown by his illustrious friend in the midst of privations and hunger, here and there having to wade through rivers, and deserted by his attendants. The little paragraph at the end was a very amusing one. Sir Bartle Frere had also received a letter, and would, probably, give the meeting some account of it.\*

Sir BARTLE FRERE said his letter went over very much the same ground as that to Lord Clarendon. Dr. Livingstone was under the impression that he (Sir Bartle Frere) was still in India, and had therefore sent him a letter to Bombay in order to diminish the risk of the information being lost. There were also in his communication a few remarks of a private nature relating to some members of his family, but of course it was not intended that they should be made public. In his letter he dwelt rather more fully than in that to Lord Clarendon, upon the feeling which was present in his mind that perhaps in seeking to solve a geographical problem he might be going away from what had been the pursuit of his life, the civilization and welfare of Africa in general. He (Sir Bartle Frere) felt sure that for once in his life Dr. Livingstone was wrong, and that, whatever directions his efforts might take, it was impossible for him to labour for anything but the good of mankind.

Mr. FINDLAY said, when Lake Tanganyika was first discovered, many difficulties were suggested against its flowing into the Nile, but there were also many difficulties attending any other solution of the problem. The theory was that a river ran into the south end and another into the north end, but its waters were perfectly clear and fresh, and there were no marks of any great accession of water. Then in what direction could the outlet be? When Speke and Burton arrived there they were in a wretched condition, the former being blinded and the latter paralysed. They heard that a river ran into it, but from the difficulties of the language they were not at all sure of that. Captain Speke, when he first mapped the neighbourhood down, had the impression that there was an open valley running northward. They had only one observation for level, and that gave the elevation 1844 feet above the sea. That was a very low level to carry it on to the Nile, which was a considerable distance

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\* A copy of this letter was afterwards communicated by Sir Bartle Frere, and is printed above, No. 4.

away. However, he (Mr. Findlay) was now gratified to find that his own conjectures were likely to be verified. The observations of Sir Samuel Baker, carefully compared with those of Speke, had since proved that 1000 feet must be added to Captain Speke's calculations, making the elevation 2800 feet. Thus it appeared that the two lakes, Tanganyika and Albert Nyanza, were on the same level. There were several difficulties connected with any other solution. On the western side of the lake high mountains were said to extend for a considerable distance. This shut out the idea of its flowing in that direction. On the eastward there was no outlet either. The rocky nature of the country forbade the belief that the Congo afforded an outlet. Then, again, the French had shown that the Ogobai was one of the most gigantic rivers of Africa, and it was possible that the Kija Lake might flow into it. He contended that the chains of mountains in that region were meridional, and that the waters of Africa ran in a northerly direction. In the course of a few months he hoped the great question would be settled. If his opinions should prove to be true, the ivory traders would in all probability prefer the Nile route to the present one to Zanzibar.

Mr. FRANCIS GALTON said it might seem strange that there should be an error of 1000 feet of altitude suspected in the observations of an explorer. Here, in England, levels were made to an inch, but the method of operating in uncivilised countries was quite different from that employed at home. Instead of using a spirit-level, and taking sights, the traveller in Africa had to boil a thermometer, that is, plunge it into boiling water in order to see at what temperature the water was. At the top of a high mountain, such as Mont Blanc, the temperature of boiling water would be insufficient to boil a potato. One degree of temperature corresponds to 500 feet in height; two degrees of temperature would be 1000 feet. The thermometer that Speke used, his others having been broken, was neither more nor less than a bath thermometer, and could not be depended on to a couple of degrees, especially after it had been taken a long journey in Africa and exposed to a dry climate. Even the glass of the best thermometers, after being often put into boiling water, becomes altered in structure, and the instruments change their boiling-point. Consequently, with an untested wooden thermometer, such an error as Speke had made was a very small matter.

Mr. FINDLAY said he had seen a pencil memorandum by Captain Speke to the effect that when he got to the coast again his thermometer boiled at  $214^{\circ}$  which was two degrees too high. Thus the error was easily accounted for.

The Rev. HORACE WALLER said that the frequent recurrence of the name Zambesi was accounted for by the fact that the word meant the "Washer," and was applied in many instances to rivers liable to high floods. Chambeze was merely a dialectic variation of Zambesi.

Captain SHERARD OSBORN thought it was a matter for congratulation that there was a prospect of Dr. Livingstone being met with and relieved by Sir Samuel Baker. He had always differed from the President in believing that if Livingstone did reach waters flowing north he would follow them down to the Nile and come out at Alexandria, and he still adhered to that opinion. It will be a great day when the two celebrated travellers meet, and the man who has discovered the sources of the Nile southward of the lakes will joyfully hold out his hand to Sir Samuel Baker who traced the Nile up to those lakes.

The PRESIDENT said by this time probably the whole question had been determined, but if the connection between the two lakes was proved he could see no reason for Dr. Livingstone's return by the Nile. The equatorial region had been already traversed, and he could gain no glory by following in the footsteps of Speke, Grant, and Baker. The road to Zanzibar was short, and he would no doubt prefer to return by that route. However this might be, the President was certain that when Livingstone returned home he would receive a more glorious welcome than was ever before given to a British traveller.